Drafting Final Project

Mini Robot Dog

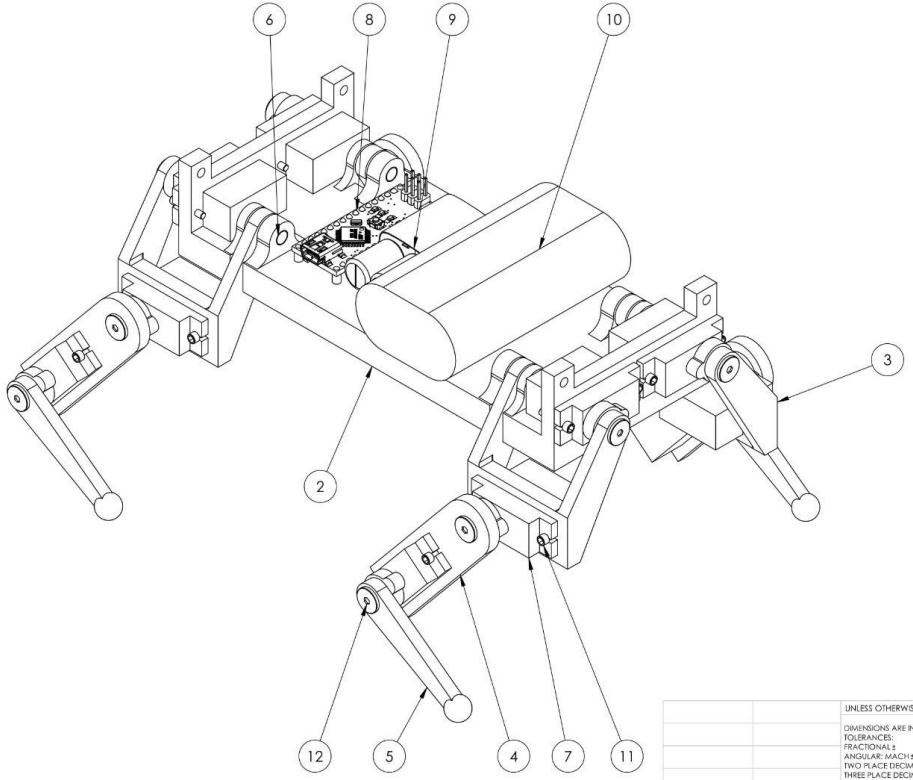
Daniil Petrov

Initial Proposal

My final project proposal is a remotely controlled robot dog. It will be 15-18 cm long and about 8 cm wide. This product will be targeted for younger children as a toy, and at older children who want to learn programming with a robot. The main components will be made with 3d printed plastic pieces, and joints will be controlled with standard remote control micro servos. The target selling price will be between $100 and $120.

Online research

Similar mini robot dogs typically sell in the range of $300-400 and have 3 joints per leg. They use similar plastic construction and use the same servo systems for their joints. These dogs are sized slightly smaller, at about 10 cm long. They also include covers for the electronics, which won't be included in this model.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2024-25	ASSEMBLY	1
2	2024-25P02	BODY	1
3	2024-25P03	SHOULDER CLIP	4
4	2024-25P04	UPPER LEG	4
5	2024-25P05	LOWER LEG	4
6	2024-25P06	SHOULDER ROD	4
7	2024-25P07	SERVO	12
8	2024-25P08	ARDUINO NANO	1
9	2024-25P09	UBEC VOLTAGE CONTROLLER	1
10	2024-25P10	BATTERY PACK	1
11	2024-25P11	M2x10 SCREW	24
12	2024-25P12	SERVO SCREW	12

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	D.PETROV	5/26/22
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

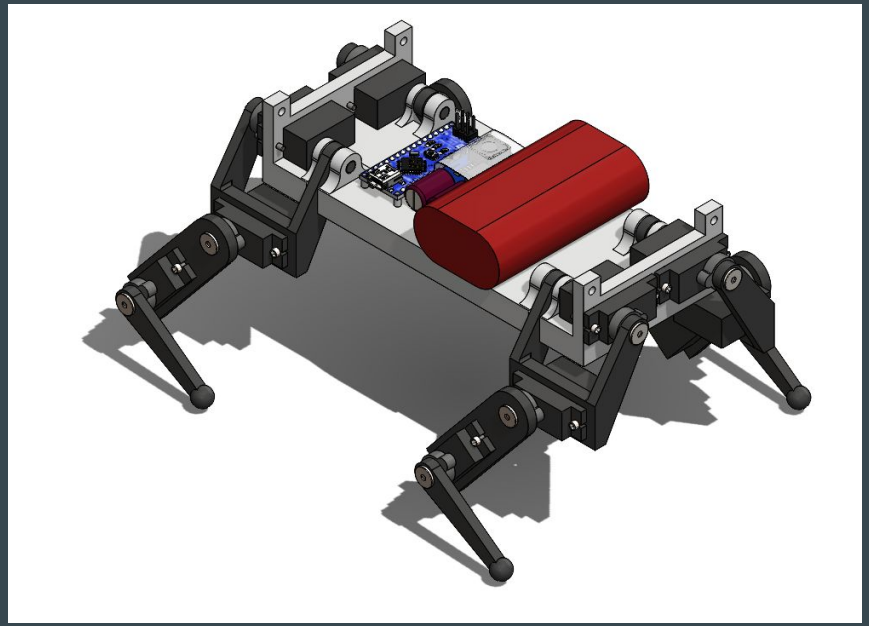
TITLE: ROBOT DOG

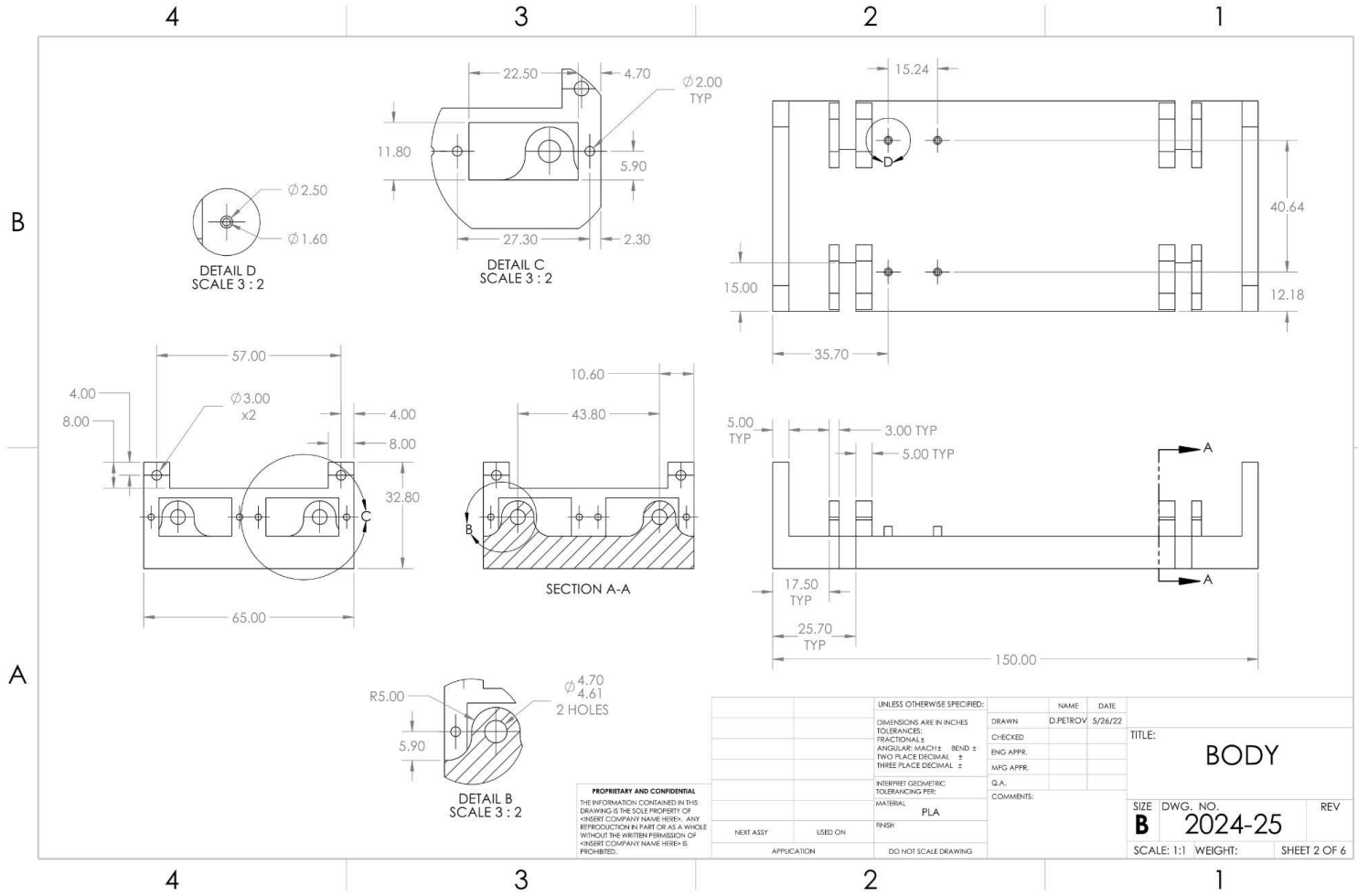
SIZE B | DWG. NO. 2024-25 | REV

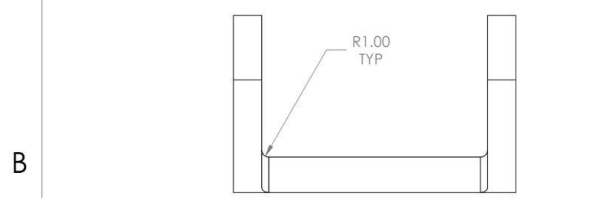
SCALE: 1:1 WEIGHT: SHEET 1 OF 6

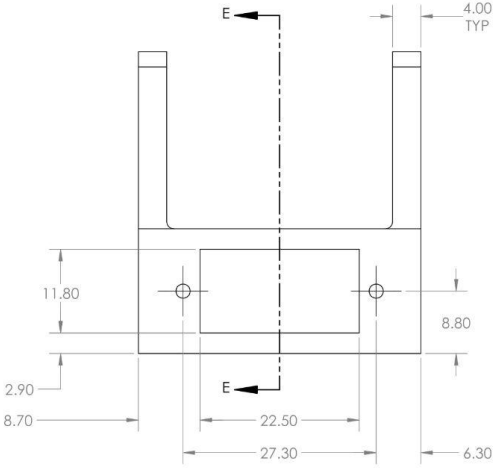
Product design

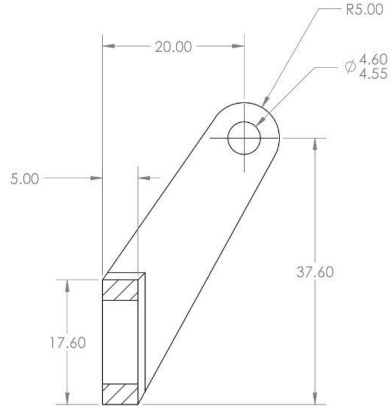
The product will have the electronics and legs mounted to one main body, and individual pieces for the legs. The final mechanical drawing is shown in the following slides.











SECTION E-E

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			CHECKED		
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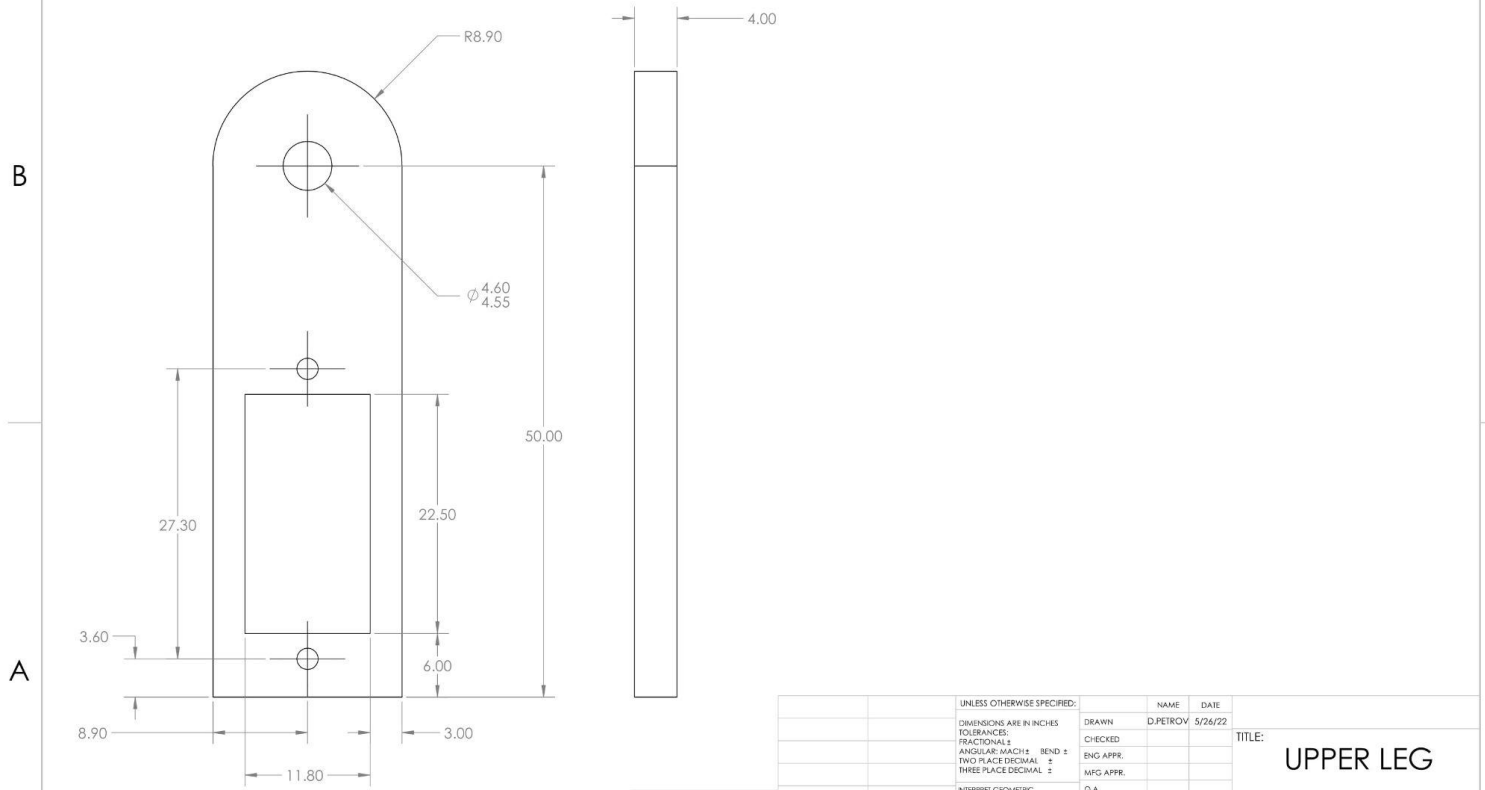
			MFG APPR.		
			Q.A.		
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:		
		MATERIAL PLA			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE: SHOULDER CLIP

SIZE	DWG. NO.	REV
B	2024-25	

SCALE: 2:1 WEIGHT: SHEET 3 OF 6



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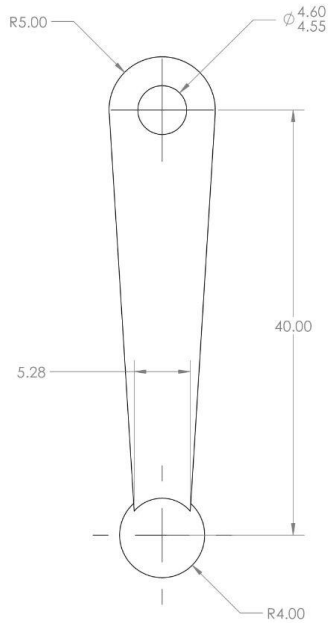
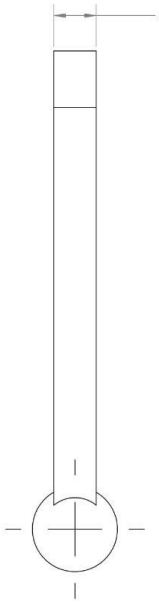
ANGULAR: MACH ± BEND ±		MFG APPR.		
TWO PLACE DECIMAL ±		Q.A.		
THREE PLACE DECIMAL ±		COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL	PLA			
FINISH				
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			

TITLE: UPPER LEG

SIZE	DWG. NO.	REV
B	2024-25	

SCALE: 3:1 WEIGHT: SHEET 4 OF 6





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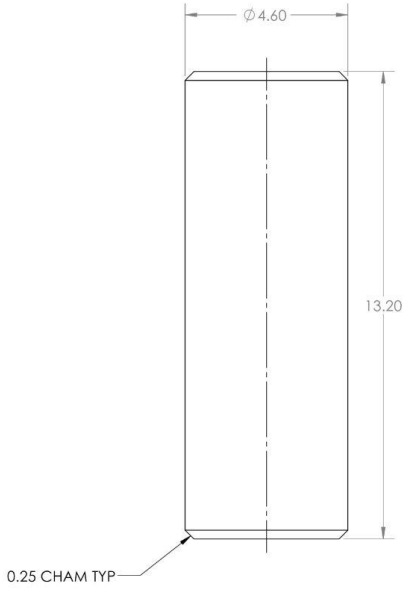
		MATERIAL	PLA		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE: LOWER LEG

SIZE	DWG. NO.	REV
B	2024-25	

SCALE: 3:1 WEIGHT: SHEET 5 OF 6



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		TWO PLACE DECIMAL ±	Q.A.		
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		MATERIAL			
		STEEL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE: SHOULDER ROD

SIZE	DWG. NO.	REV
B	2024-25	

SCALE: 10:1 WEIGHT: SHEET 6 OF 6

Final statistics

The final design has a body that matches the target of 15 cm in length. The width is slightly under the target at about 10cm. The total estimated cost is $120:

- Arduino Nano - $23
- 2 Cell Battery - $12
- 12 Micro Servos - $25
- Arduino Servo Shield - $18
- 3d printed parts - $5
- RC Controller and Receiver - $30
- Misc hardware - $7